



Exploring Technology Innovations for Improved Line Managers' Job Engagement in a New World of Work: Empirical Evidence from Government Parastatals in Nigeria

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Received: 12.07.2023

Accepted: 21.10.2023

Date of Publication: October, 2023

Abstract

This study examines the influence of technology innovations on line managers' engagement in the world of work. Two hundred and thirty-four (234) line managers were surveyed, out of which two hundred and seventeen (217) copies of the questionnaire were returned and used for the analysis. Smart PLS (3.0) was used for the analysis. Findings show that telecommuting, work process automation, mobile collaboration, and gamification significantly influence line managers' job engagement. The study recommended that public parastatals should leverage technological innovations to improve line managers' job engagement. However, line managers must also understand their critical roles as professionals to take advantage of technological innovations for improved job engagement.

Keywords: Telecommuting, Work process automation, Mobile collaboration, Gamification, Job engagement

1.0 Introduction

Job engagement has progressively received research attention from various scholars in strategic human resource management, organisational behaviour, and other related disciplines in 21st-century organisations characterised by stiff competition. The unprecedented research attention in this area could be attributed to organisations' efforts to build a highly engaged workforce, especially in public parastatals and agencies. This becomes feasible if employees, particularly line managers, are emotionally and physically attached to and engaged with their organisations' strategic goals. The level of job engagement determines the extent to which organisations' strategic objectives can be achieved. However, the concentration of a highly engaged workforce in public parastatals or agencies may help in achieving and maintaining a competitive advantage,

particularly if relevant technological innovations are leveraged by line managers (Falola *et al.*, 2018, Salau *et al.* 2020). Technology innovation has been identified as one of the driving forces of line managers' engagement in public and private organisations. The public sector cannot ignore the rapid changes in operations and performance management brought about by technology adoption. Thus, technological innovation becomes necessary to enrich line managers' job engagement to enhance operational effectiveness, reduce workload, and increase organisational efficiency (Adeniji *et al.* 2018, Falola *et al.* 2021). Integrating technology innovation into human resource management practices helps line managers and other employees to be more engaged and productive. This could be attributed to how technology turns job responsibilities into sweat-less and stress-less processes, thereby making the job more pleasurable and gratifying (Abbas, Muzaffar, Mahmood, Ramzan and Rizvi, 2014; Cascio & Montealegre, 2016). The ability of line managers to leverage telecommuting, automation of work processes, mobile collaboration, and gamification, among others, may foster highly productive job engagement in the public sector.

Other researchers have acknowledged that technology is required to reshape human resource management practices in the digital world of work (Bilevičienė, Bilevičiūtė & Paražinskaitė, 2015). Some scholars have researched the relationship between technology and learning and development. Some of them include (De-Noyelles, Hornik, & Johnson, (2014), work engagement and employee behaviour (Falola, Olokundun, Salau, Oludayo & Ibidunni, 2018), technology innovation and talent attraction (Rodríguez-Sánchez, Montero-Navarro and Gallego-Losada, 2019), work engagement and performance (Woocheol, Soo and Jiwon, 2019). Studies on the subject of innovation, work engagement, flexibility and how they affect general innovative performance (Anitha, 2014; Canibano, 2018; Falola, Salau, Osibanjo, Ogueyungbo & Atolagbe, 2020; Gupta, & Shaheen, 2017; Jesuthasan, 2017; McGrath, Cooper-Thomas, Garrosa, 2017). This creates knowledge gaps about technology innovations and line managers' engagement in the existing literature. Therefore, this study focuses on leveraging HR technology innovations that may enhance line managers' job engagement in this epoch of hypercompetitive business environment, which has not been widely researched, particularly in the limited liability public agencies in Nigeria.

This study also provides insight into how HR technology innovations can be leveraged to enhance line managers' affective, cognitive and behavioural engagement. In a related development, this study offers more profound insight into what the management and other stakeholders in the public parastatals will need to do to leverage on technology innovation required for the productive engagement of the line managers. Consequently, the study's specific objectives are to: examine the influence of telecommuting on line managers' engagement, investigate the effect of work process automation on line managers' engagement, explore the influence of mobile collaboration on line managers' engagement, and examine the impact of gamification on line managers' engagement. However, for these objectives to be achieved, the first and second parts of the study focused on the background of the study and the literature review. On the other hand, the third and fourth parts

of the study centred on methodology, data analysis and discussion, while the last section of the study focused on conclusions, limitations and recommendations for future studies.

2.0 Literature Review

Concept of Technology Innovation

Technological innovation uses technology that helps drive effectiveness and efficiency to meet a higher variety of needs that will culminate into a sustained competitive advantage (Apostu, Puican, Ularu, Suciu, & Todoran, 2013). Also, technological innovation is a constant movement embraced inside a business adventure to add esteem and enhance the work procedure. Technology innovation sharpens inventiveness and innovation in HR practices (Bakan, Tasliyan, Eraslan, & Coskun, 2017). The management of organisations can leverage technology innovation to enhance job engagement, commitment, high performance and job satisfaction. However, some of these technology innovations are discussed as follows:

Telecommuting and Job Engagement

The workplace is continually changing with the adoption of technology in all sectors. Technology innovation has made work more flexible, appealing and enjoyable because employees can work from home (Allen, Golden & Shockley, 2015; Ahmad, 2014, Feng, and Tobias, 2021; Ojo *et al.*, 2014). The flexibility of work arrangements, i.e. telecommuting adoption, could enhance job engagement (Gajendran, Harrison, Delaney-Klinger (2014). Telecommuting in this context is the use of technology that permits employees to work away from the central place of work. Telecommuting arrangement allows employees to increase work-life balance through flexible work arrangements. Research has shown that employees' engagement increases significantly with telecommuting arrangements (Oludayo, Falola, Obianuju & Demilade, 2018). This probably makes some organisations embrace telecommuting as a business practice to reduce unnecessary expenses and at the same time encourage productive job engagement (Golden & Fromen 2011). What makes telecommuting worthwhile is the access to internet-enabled devices used by employees to interact, collaborate and work together without necessarily coming to the central office. It has also been established in the literature that telecommuting helps to reduce daily commutes and central office distractions that can be used for more engaging and rewarding assignments and at the same time satisfy family care obligations (Greer & Payne, 2014). Employee engagement increases when telecommuting is embraced by the management of the organisations, particularly among employees whose job responsibilities are complex and do not require physical collaboration to perform. Employees in this category are more engaged (Gajendran, Harrison & Delaney-Klinger, 2014, Lapierre & Allen (2012, McGrath, Cooper-Thomas & Garros, 2017). Sequel to the above, the study proposed the following hypothesis.

H₀: Telecommuting has no significant influence on the job engagement of line managers.

Work Processes Automation and Job Engagement

Many organisations have automated their work processes for more efficient, effective, and pleasurable work delivery Hultin, Trudell, Vashistha, Glover (2017). In this regard, organisations have invested in developing automation software to enhance operational proficiency and employee engagement (IOMA Research, 2011, Nawaz and Gomes, 2014). Automation of the work process is helpful for several things: it makes documentation more accessible and safer; it can be used to generate data that can be analysed for decision making and more importantly, it can also be used to drive job engagement (Ruël, Bondarouk, Looise, 2004). The literature has also established that automation saves cost and time and makes the job process more accurate. This will invariably propel employees to be enthusiastic and psychologically satisfied with their job responsibilities. If employees are satisfied with the work processes, it will naturally culminate in highly productive job engagement (Society for Human Resource Management, 2008). To this end, the study formulated the following hypothesis.

H₀: Automation of the work process has no significant influence online managers' job engagement.

Mobile collaboration and Job Engagement

The influence of technology on the employees' lifestyle at work cannot be overemphasised. Many organisations are embracing mobile collaboration by adopting digitalised smart technologies in various offices. Smart offices enhance employees' job engagement and satisfaction (Holland, 2016; Miller-Merrell, 2012). Therefore, mobile collaboration technology, which includes sharing work-related videos, pictures, materials, and communication sources, is a platform many organisations are exploring to build a more engaged workforce. Carayannis and Clark (2011) posited that mobile collaboration is a platform through which employees can carry out their job responsibilities through collaboration, information sharing and connecting with others in the business world. This is to promote highly productive business relationships within the organisation and from the external context (Pitichat, 2013). This is done through the development of an employee collaboration solution. Employee collaborative solution or app helps management get prompt updates from the line's managers. The quick update will most likely aid the management in making decisions that will improve the line managers' job engagement. This will make the organisations more responsive to what line managers need to earn their job engagement. It is on this note that the study formulated the following hypothesis.

H₀: Mobile collaboration has no significant effect on the job engagement of line managers.

Gamification and Job Engagement

Gamification, as a concept, describes the use of various game elements designed to enhance employee job engagement in the world of work. Scholars have identified gamification as technologically inclined as one of the strategies to make work more exciting and enjoyable (Kim & Park (2017; Salmela-Aro & Upadhyaya, 2018). If the employees enjoy doing their jobs, there is a hood that they will be more productively engaged. Gamification by way of explanation is the introduction of applicable elements of game playing that give room for solving complex tasks with fun (Bailey, Madden, Alfes, Fletcher, 2017; Kumar, Jauhari, Rastogi, Sivakumar, 2018)

The process includes scoring points and competing with others to proffer solutions to the identified problems through a total adherence to the rules of the game in a more relaxed atmosphere (Hussain, Qazi, Ahmed, 2018). The idea behind this process is to motivate employees to be more engaged in running business processes optimally without necessarily accumulating pressure and stress. Researchers have also noted that gamification is mainly used to boost employees' engagement by creating an enabling environment that will make the work process more exciting and interesting (Aziz, Mushtaq, & Anwar, 2017; Kim, Khan, Wood, Mahmood, 2018). Gamification provides a platform that helps organisations modify the workplace to be optimally engaging with fun. Several authors have established that gamification enhances employees' satisfaction and job engagement (Hammadi, Hammadi, Leclerq, Leclerq, and Van-Riel. 2017; Woocheol, Soo & Jiwon, 2019). Based on the foregoing, the study formulated the following hypothesis.

H₀: Gamification has no significant influence on the job engagement of line managers.

3.0 Methodology

This study focuses on leveraging HR technology to enhance line managers' job engagement in Nigeria's limited liability public parastatals. The HR technology that may be leveraged by the management of the parastatals was measured with four constructs which include work process automation, mobile collaboration, gamification and telecommuting, while line managers' job engagement was measured using affective engagement, behavioural engagement, intellectual and cognitive engagement. It is equally imperative to state that the descriptive research design was adopted because of the type of study which is descriptive. What informed the choice of this type of design was that it helps investigate the relationship between endogenous and exogenous variables. The design is also used because it assists in examining the sample at an accurate time without altering the behaviour. To measure the influence of HR technology innovation and line managers' job engagement, SPSS and smart PLS were used. The structural path co-efficient, which was established through the PLS Algorithm Model, PLS Bootstrapping Model with β and P values and PLS Bootstrapping Model with β and T values, were used to determine the level of the significant influence of HR technology innovation on line managers' job engagement.

Reliability and validity of the research instrument were also carried out using confirmatory factor loading, construct composite reliability, error variance, construct average variance extracted

estimate and Cronbach's alpha. CFA loading and construct composite reliability output as depicted in Table 1 are above the threshold of 0.70 and 0.80, respectively, while error variance is less than 0.5 as expected. Similarly, the construct average variance extracted estimate is above the minimum threshold of 0.5. On the other hand, content and face validity were also carried out using experts to review the research instrument. In contrast, the pilot survey was used to certify content and face validity. The population of the study comprises all the public parastatals in Lagos and Ogun State. The selection of the participating agencies/ parastatals was based on their performance. Two hundred and thirty-four (234) line managers were chosen by adopting multistage sampling techniques, i.e. purposive, stratified and convenient sampling techniques. Line managers were purposively selected to participate in the survey to get reliable information. At the same time, stratified sampling was also used because the population comprises different strata. Each stratum gave equal opportunity to every line manager to be selected based on their availability. Convenient sampling was used because only the available line managers or equivalents were recruited for the study. The sample was drawn from all line managers in different departments and units to harvest their opinions on how they leveraged HR technology innovations to enhance job engagement. A structured questionnaire was used to collect data from the respondents via a 5-point Likert scale. The processes for the analysis assumptions were given adequate attention through scrutiny, as suggested by Anderson and Tatham (2009). It must be reported that the variance inflation factor and acceptance values were within the threshold > 0.2 and > 5.0 . Also, the Listwise deletion method was used to eliminate missing data, which was less than 3%.

Compliance with Ethical Standards

The researcher adhered strictly to research ethics. All the necessary documentation was done, and approvals were given for the conduct of the study in the selected government agencies and parastatals and the research ethics committee. In the spirit of confidentiality, every respondent was allowed to stay anonymous. It is also imperative to note that every respondent gave their implied consent. This is because the study has no risk to the line managers recruited for the survey, as it were. This is in line with Falola, Ogueyungbo, and Ojebola's (2020) submission, which noted that implied consent is sufficient for any study with no or little risk. The researchers ensured that respondents were adequately informed about the study's scope and objective and the protocol for survey participation. Most people verbally agreed to participate in the survey, while few declined. Those who agreed to participate were also assured that they could opt out of the survey at any time without giving any reason(s). It should also be noted that no conflicts of interest can be linked directly to this study (See Table 1).

Table 1: Constructs Validity and Reliability

	Loading	AVE	Compose Reliability	Cronbach's Alpha	RhO.A
Constructs	≥ 0.7	≥ 0.5	≥ 0.8	> 0.7	
Telecommuting (TC)		0.615	0.864	0.791	0.817
TC1	0.765				
TC2	0.890				
TC3	0.754				
TC4	0.727				
Work Process Automation (WPA)		0.642	0.877	0.813	0.824
WPA1	0.774				
WPA2	0.800				
WPA3	0.870				
WPA4	0.755				
Mobile Collaboration (MC)		0.564	0.837	0.739	0.756
MC1	0.845				
MC2	0.757				
MC3	0.732				
MC4	0.659				
Gamification (GM)		0.700	0.903	0.857	0.858
GM1	0.846				
GM2	0.832				
GM3	0.837				
GM4	0.832				
Line Managers' Job Engagement (LMJE)		0.526	0.816	0.701	0.702
LMJE1	0.722				
LMJE2	0.710				
LMJE3	0.743				
LMJE4	0.725				

4. 0 Results

HR technology innovations that can be leveraged were measured with four constructs (telecommuting, work process automation, mobile collaboration, and gamification). At the same time, line managers' job engagement was also measured with affective engagement, behavioural engagement, cognitive and intellectual engagement). It is pertinent to note that to have a piece of clear and precise information about the formulated hypothesis, R-Square, i.e. the coefficient of determination, structural path co-efficient (B value), and P-values are critical indicators of Smart PLS that must be determined as presented in Figures 1.

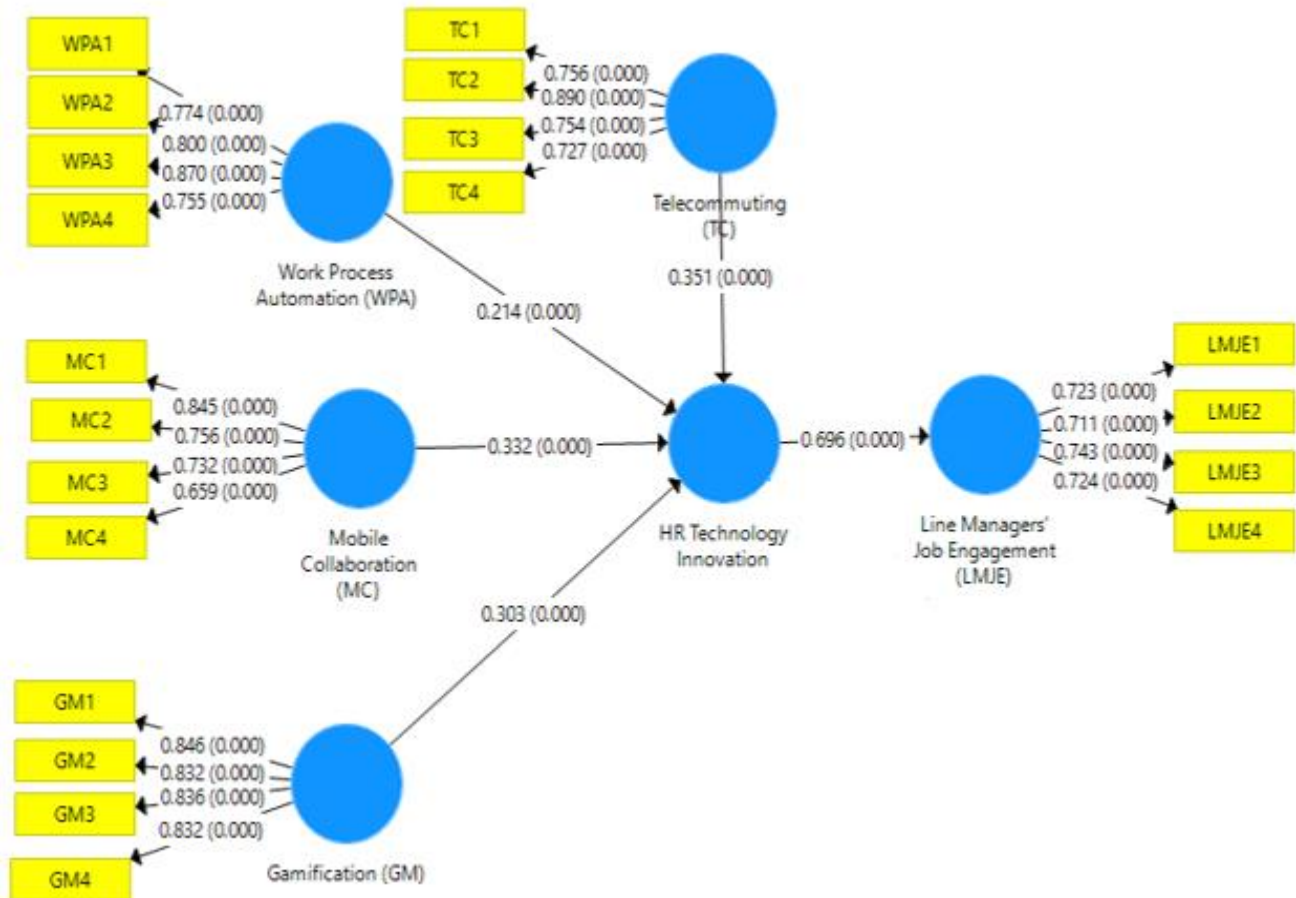


Figure 1: PLS Bootstrapping Model with β and P values

Figure 1 depicts the PLS Bootstrapping Model with β and P values. HR technology innovation that can be leveraged and job engagement of line managers. The path shows the level of relationship that exists between the two variables. The R-square is usually used to determine the level of variance of the endogenous variable and the exogenous variable. R-square is categorised into substantial, moderate and weak, notable if the value is 0.75, moderate if it is >0.50 , a weak if it is ≤ 0.25 . Table 2 also depicts that HR technology innovation collectively explained 48.4% of the variability of job engagement. This implies that the items of HR technology innovation moderately explain 48.4% of the variance in job engagement.

The β value, which connotes the expected variance in the job engagement of line managers for a unit variation in the HR technology innovation, was used to test the significance of the hypothesis formulated. It must be noted that the higher the β value, the more the substantial effect on HR technology innovation. The significant impact of HR technology innovation on the job engagement of line managers was verified through the T-statistical test. At the same time, the path coefficient presented in Table 2 was used to determine the level of relationships.

Table 2 Path Co-efficient

Variables	Path Co-efficient	Indirect Effect	Standard Deviation	T Statistics	P Values
Technology Innovation (TI) → Line Managers Job Engagement (LMJE)	0.696		0.058	10.797	0.000
TM 1 → TI	0.351		0.033	11.212	0.000
TM 2 → LMJE		0.242	0.029	8.719	0.000
WPA1 → TI	0.214		0.036	6.111	0.000
WPA2 → LMJE		0.146	0.027	5.398	0.000
MC1 → TI	0.332		0.038	8.994	0.000
MC2 → LMJE		0.235	0.033	7.047	0.000
GM 1 → TI	0.303		0.038	8.040	0.000
GM 1 → LMJE		0.206	0.031	6.590	0.000
R Square					
	R Square		Adjusted R Square		
	0.484		0.479		

Table 3 Summary of Hypotheses

Hypotheses Stated in null forms	Coefficients	t-value	p-value	Empirical Evidence
i. Telecommuting has no significant influence on the job engagement of line managers.	0.351	11.212	0.000	Null hypothesis Rejected
ii. Automation of the work process has no significant influence on online managers' job engagement.	0.214	6.111	0.000	Null hypothesis Rejected
iii. Mobile collaboration has no significant effect on the job engagement of line managers.	0.332	8.994	0.000	Null hypothesis Rejected
iv. Gamification has no significant influence on the job engagement of line managers.	0.303	8.040	0.000	Null hypothesis Rejected

Table 2 depicts the PLS statistical and empirical results of the structural model of the study. It was observed that the path coefficient of telecommuting, work process automation, mobile collaboration, and gamification indicates a significant relationship at 0.05. telecommuting also has indirect significant influence on job engagement ($\beta=0.242$, T-value=8.719, P-value =0.000 <0.05). In a related development, it was also found from the path co-efficient that work process automation has a significant indirect influence on job engagement ($\beta=0.146$, T-value=5.398, P-value =0.000

<0.05). Also, the path co-efficient value shows that mobile collaboration has an indirect significant influence on job engagement ($\beta=0.235$, T-value=7.047, P-value =0.000 <0.05). Similarly, the path coefficient also revealed that gamification (GM) indirectly and significantly influenced job engagement ($\beta=0.206$, T-value=6.590, P-value =0.000 <0.05). Sequel to the beta values presented in Table 2, it was discovered that telecommunicating has the highest beta value among other measures of HR technology innovation that best predict line managers' job engagement. In contrast, work process automation has the least influence on job engagement. This implies that management should continue to encourage telecommuting and improve on the work process automation. Generally, the path coefficient shows that the influence of HR technology innovation on line managers' job engagement is statistically significant with a beta value of 0.697 with a t-value of 12.037. This implies that HR technology innovation strongly influences online managers' job engagement. Largely, the beta value of 0.697 suggests a 69.7% influence on a principal variable, i.e. if one unit of HR technology innovation increases, then 69.7% job engagement will increase.

5.0 Discussion of Findings

This study provides evidence of leveraging technology innovations for improved line managers' job engagement within the context of public parastatals in Nigeria. **The line managers' job engagement in terms of behavioural, cognitive and affective engagement in the new normal world** of work as necessitated by the impact of the COVID-19 pandemic is a function of the availability of digital technology that can be leveraged. On the other hand, technology innovation could be telecommuting, work process automation, mobile collaboration, and gamification. Adopting and accepting digital technological innovation to drive productive job engagement is the way to go in the new world of the work era. This will become possible if the leadership of the government parastatals and agencies adequately invest in digital technology that can bring about innovation and productive engagement in the organisation. The findings show that telecommuting has a significant influence on job engagement. These findings imply that if employees are allowed to work from home, the level of engagement could be increased.

This finding validates the submissions of McGrath, Cooper-Thomas and Garrosa, (2017) and Greer & Payne (2014). They found out that telecommuting increases the level of employee engagement significantly. This implies that government parastatals should invest in technology innovations that will allow for flexible work arrangements, particularly among employees whose job responsibilities do not require physical collaboration to perform. This was also corroborated by Falola, Ogueyungbo and Ojebola (2020). They posited that management initiatives in providing necessary support for employees would culminate in improved job engagement in the world of work. Oludayo et al. (2018), in their article titled "Work-life Balance Initiative as a Predictor of Employee Behavioural Outcomes" also noted that flexible work arrangements, if encouraged, would increase the performance of employees.

In a related development, it was also discovered that work process automation significantly influences job engagement. This implies that line managers in the government parastatals in Nigeria will perform optimally if the work processes are automated. This corroborates with the findings of Hultin, Trudell, Vashistha, and Glover (2017), who noted that employees are more accurate, effective and efficient if the work processes are automated. In addition, Nawaz and Gomes (2014) also validated these findings and posited that automation enhances operational proficiency and makes the job more interesting and pleasurable.

The findings also show that mobile collaboration significantly influences job engagement. This suggests that mobile collaboration if reinvigorated by the management of the government parastatals, will foster line managers' productive engagement that will enhance the competitive advantage among other government parastatals and agencies. Mobile collaboration can be encouraged if the management provides smart offices in the workplace. In his findings, Miller-Merrell (2012) found that mobile collaboration helps employees carry out their job responsibilities through collaboration, information sharing, and connecting with others in the business world. Therefore, if the line managers in the government parastatals can build business relationships and connect with their counterparts around the globe, it will impact their level of job engagement. This is because they will want to naturally put what they have learned into practice as a result of interaction with the outside world. This can be facilitated by developing employee collaboration solutions or apps, as posited by (Pitichat 2013).

Besides, gamification (GM), as found out from the empirical investigation, showed a significant influence on job engagement. This implies that if the government parastatals give gamification adequate attention, it will considerably enhance the job engagement of line managers. This finding corroborates Anitha's (2014) submission that gamification plays a significant role in improving institutional outcomes. This suggests that gamification should be encouraged for the government parastatals in Nigeria to earn and sustain the highly productive engagement of line managers. This also validates the submission of Aziz, Mushtaq and Anwar (2017) and Landers and Armstrong (2017). They submitted that gamification motivates employees to be more engaged in running business processes optimally without necessarily accumulating pressure and stress.

Conclusion and Implications

The use of technology in the delivery of HR practices has become inevitable, particularly in technology-driven organisations. Leveraging on these innovations to drive the line managers' job engagement becomes inevitable. Therefore, it is believed that if the management of government parastatals invests and leverages HR technology innovations, it will help the line managers be more productively engaged. Telecommuting, mobile collaboration, automation of work processes and gamification are some of the technological innovations that can be leveraged by government parastatals to enhance line managers' productive job engagement. Therefore, it is recommended that government parastatals' leadership leverage technological innovations for improved job engagement of line managers. However, line managers must also understand their critical roles as professionals to take advantage of the technology innovations for improved job engagement and

at the same time encourage, inspire and motivate other lower cadre employees to do the same. This will go a long way in driving the strategic goal of the government parastatals. It is also recommended that government parastatals invest in technology for effective and efficient work process automation and encourage telecommuting, mobile collaboration, and gamification to improve employee commitment, involvement, and engagement. In all of these, the leadership of the government parastatals is also encouraged to give adequate and necessary attention, support and motivation to line managers to drive satisfaction and improve their morale. This will culminate in high job engagement. Finally, the developed model serves as a springboard for further research, particularly on technology innovation and line managers' job engagement in the government parastatals across different nations of both developed and developing economies.

Limitations and Suggestions for Further Studies

The study covers only thirty-two government parastatals in Lagos and Ogun States, Nigeria. Also, only line managers in the selected government parastatals were considered for this study. This suggests that the scope of the study is limited. Therefore, further studies should increase the scope of the study to include other government parastatals in other states and federal capital. Future studies can also include other categories of employees in the government parastatals. This study looked at the direct influence of HR technology innovation that can be leveraged by government parastatals to enhance job engagement; future research can introduce intervening variables that may strengthen the relationships between technology innovation and job engagement. Besides, this study focused on the quantitative method; further studies can adopt mixed methods for more robust findings.

Reference List

- Abbas, J., Muzaffar, A., Mahmood, H.K., Ramzan, MA, & Rizvi, S. (2014). Impact of technology on the performance of employees. *World Applied Sciences Journal*, 29(2), 271-276.
- Adeniji, C, Adeyeye, J.O., Iyiola, O.O, Falola, H.O, Salau, O.P (2018). Data on the impact of technological change on employees' cognitive attitude and organisational performance. *Data in Brief*. 18, 1360-1364.
- Ahmad, S. (2014). Technology in organisations. *International Journal of Research in Business Management*, 2(7), 73-80.
- Allen, T.D, Golden, TD and Shockley K. M (2015), How Effective Is Telecommuting? Assessing the Status of Our Scientific Findings. *Psychological Science in the Public Interest*, 16(2), 40-46
- Anitha, J. (2014) Determinants of employee engagement and their impact on employee performance. *International Journal of Productivity and Performance Management*. 63(3) 308-323.

- Aziz, A., Mushtaq, A., Anwar, M. (2017). Usage of gamification in the enterprise: A review", Paper presented at the *Communication, Computing and Digital Systems (C-CODE)*, International Conference on.
- Bailey, C.; Madden, A.; Alfes, K.; Fletcher, L. The meaning, antecedents and outcomes of employee engagement: A narrative synthesis. *Int. J. Manag. Rev.* **2017**, 19, 31–53
- Bakan, I., Tasliyan, M., Eraslan, H., & Coskun, M. (2017). *The effect of technology on organisational behaviour & the nature of work*. Turkey: Imam University.
- Bilevičienė T., Bilevičiūtė, E., Paražinskaitė, G. (2015). Innovative Trends in Human Resources Management, Economics and Sociology. 8(4), 94-109.
- Canibano, A. (2018). Workplace flexibility as a paradoxical phenomenon: Exploring employee experiences. *Human Relations*, 72(2), 444–470.
- Carayannis, E. G., & Clark, S. C. (2011). Do Smartphones make for smarter business? The smartphone CEO study. *Journal of the Knowledge Economy*, 2(2), 201–233
- Cascio, W.F., & Montealegre, R. (2016). How technology is changing work and organisations. *The Annual Review of Organizational Psychology and Organizational Behavior* (3), 349-375.
- De-Noyelles, A., Hornik, S. R., & Johnson, R. D. (2014). Exploring the Dimensions of Self-Efficacy in Virtual World Learning: Environment, Task, and Content. *Journal of Online Learning & Teaching*, 10(2).
- Falola, H.O, Salau, O.P, Osibanjo, A.O, Ogueyungbo, O.O and Atolagbe, T. (2020). Institutional digital initiatives and faculty engagement in selected universities in Nigeria. Proceedings of EDULEARN20 Conference, 8546-8553
- Falola, H. O, Ogueyungbo, O. O and Ojebola, O. O (2020). Workplace management initiatives and talent engagement in the Nigerian pharmaceutical industry. *F1000Research*, 9(699), 1-12.
- Falola, H.O, Olokundun, A.M, Salau, O.P, Oludayo, O.A and Ibidunni, A.S (2018). Effect of work engagement strategies on Faculty Staff behavioural outcomes in private universities. *Data in Brief*.
- Falola, H.O, Amoo, E.O, Ufua, D.E. (2021). Nurturing young faculty for improved job engagement: The moderating role of institutional citizenship behaviour in the new normal world of work, *Cogent Social Sciences*, 7:1, 1927530.
- Feng, Q and Tobias, D. (2021). Virtual work intensity, job satisfaction, and the mediating role of work-family balance: A study of employees in Germany and China. *German journal of human resource management*. 10(3): 223–239.

- Gajendran, R. S., Harrison, D. A., Delaney-Klinger, K. (2014). Are telecommuters remotely good citizens? Unpacking telecommuting's effects on performance via ideals and job resources. *Personnel Psychology*, 68, 353–393.
- Golden, T. D., Fromen, A. (2011). Does it matter where your manager works? Comparing managerial work modes (traditional, telework, virtual) across subordinate work experiences and outcomes. *Human Relations*, 64, 1451–1475.
- Greer, T. W., Payne, S. C. (2014). Overcoming telework challenges: Outcomes of successful telework strategies. *The Psychologist-Manager Journal*, 17, 87–111
- Gupta, M & Shaheen, M. (2017) The impact of work engagement and turnover intention: Moderation by Psychological capital in India. *Business: Theory and Practice*, 18(1), 136–143
- Holland, (2016). The impact of technology on work in the twenty-first century: Exploring the bright & dark side. *The International Journal of Human Resource Management*, 27(21), 2579-2581.
- Hultin, J Trudell, C., Vashistha, A. Glover, T. (2017). *Implications of technology on the future workforce*
- Hussain, S., Qazi, S, Ahmed, R.R (2018), Dalia Streimikiene and Jolita Vveinhardt /Montenegrin Journal of Economics, 14(4), 097-107.
- IOMA Research,(2011). Automation Reigns Supreme to Improve Benefits Department. Operations, *Managing Benefits Plans*.11 (6), 8-10.
- Jesuthasan, R. (2017). HR's new role: rethinking and enabling digital engagement. *Strategic HR Review*. 16(2), 60–65.
- Kim, W.; Khan, G.F.; Wood, J.; Mahmood, M.T. (2018). Employee engagement for sustainable organisations: Keyword analysis using social network analysis and burst detection approach. *Sustainability*, 8, 631.
- Kim, W.; Park, J. (2017). Examining structural relationships between work engagement, organisational, procedural justice, knowledge sharing, and innovative work behaviour for sustainable organisations. *Sustainability*, 9, 205.
- Kumar, M.; Jauhari, H.; Rastogi, A.; Sivakumar, S. Managerial support for development and turnover intention: Roles of organisational support, work engagement and job satisfaction. *Journal of Organisational Change Management*. 31, 135–153.
- Lapierre, L., Allen, T. D. (2012). Control at work, control at home, and use of planning behaviour: Implications for work interference with family and family interference with work. *Journal of Management*, 38, 1500–1516.

- Landers, R. N., Armstrong, M. B. (2017). Enhancing instructional outcomes with gamification: An empirical test of the Technology-Enhanced Training Effectiveness Model. *Computers in human behaviour*, 71, 499-507.
- McGrath, E, Cooper-Thomas, H. D, Garrosa, E.,(2017). Rested, friendly, and engaged: The role of daily positive collegial interactions at work. *Journal of Organisational Behaviour*; 38, 1213–1226.
- Miller-Merrell, J. (2012). The workplace engagement economy where HR, social, mobile, and tech collide. *Employment Relations Today*. n.d. 1-9.
- Nawaz, M.N, Gomes, A.M. (2014). Automation of the HR functions enhances the professional efficiency of the HR Professionals-A Review. *International Journal of Management, IT and Engineering*. 4(2), 364-373.
- Oludayo, O.A, Falola, H.O, Obianuju, A and Demilade, F. (2018). Work-life balance initiative as a predictor of employee behavioural outcomes. *Academy of Strategic Management Journals*. 17(1).
- Ojo, I. S, Salau, O. P and Falola, H. O (2014). Work-Life Balance Practices in Nigeria: A Comparison of Three Sectors. *Journal of Competitiveness*. 6(2), 3-14 TOMAS BATA UNIVERSITY.
- Pitichat, T. (2013) "Smartphones in the workplace: Changing organisational behaviour, transforming the future, "LUX: A Journal of Transdisciplinary Writing and Research from Claremont Graduate University. 3(1), 1-10
- Rodríguez-Sánchez, J. Montero-Navarro, A and Gallego-Losada, R. (2019). The Opportunity Presented by Technological Innovation to Attract Valuable Human Resources. *Sustainability*, 11(20), 5785
- Ruël, H.J.M., Bondarouk, T.V., Looise, J.C. (2004). E-HRM: innovation or irritation? An exploration of web-based human resource management in five large companies. *Management Revue*, 15, 3. 13.
- Salau, O. P, Worlu, R. E, Osibanjo, A. O, Adenji, A. A, Falola, H. O., Ogueyungbo, O.O., (2020). The Impact of Workplace Environments on Retention Outcomes of Public Universities in Southern Nigeria. *Sage Open*.1 –16.
- Salmela-Aro, K.; Upadyaya, K. (2018). Role of demands-resources in work engagement and burnout in different career stages. *Journal of Vocational Behaviour*. 108, 190–200
- Society for Human Resource Management (2008), How HR Technology Saves Time & Money, HR magazine- HR Technology.
- Woocheol Kim, Soo Jeoung Han and Jiwon Park (2019). Is the Role of Work Engagement Essential to Employee Performance or ‘Nice to Have’? *Sustainability*. 1-16.